

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process for producing a scratch-resistant coating, said process comprising:

applying at least one UV-curable coating composition comprising a mixture of at least one aliphatic urethane (meth)acrylate prepolymer having at least two double bonds per molecule and having a viscosity in the range from 250 to 11,000 mPa•s, and at least one reactive diluent, to a substrate to form a wet coating and

curing said wet coating by exposure to ultraviolet radiation under an inert gas atmosphere,

wherein the aliphatic urethane prepolymer is obtained by reacting at least 25% of the isocyanate groups of a compound (A) containing at least two isocyanate groups per molecule with (B) at least one hydroxy alkyl ester of acrylic acid, methacrylic acid or both acrylic acid and methacrylic acid, and subsequently reacting any remaining isocyanate groups of (A) with a chain extender (C) selected from the group consisting of an aliphatic diol having up to 20 carbon atoms, a polyol having up to 20 carbon atoms, a diamine having up to 20 carbon atoms, a polyamine having up to 20 carbon atoms, an alkanolamine having up to 20 carbon atoms, a dimercaptan having up to 20 carbon atoms, a polymercaptan having up to 20 carbon atoms, a hydroxyalkylester of a long-chain dicarboxylic acid, and an alkylamineamide of a long chain dicarboxylic acid,

wherein component (A) is obtained by reacting at least one of a low molecular mass aliphatic diisocyanate or polyisocyanate with a compound having at least two isocyanate-reactive functional groups wherein the ratio of the isocyanate groups of component (A) to the functional groups of the compound is in the range of from 3:1 to 1:2.

Claim 2 (Previously Presented): The process as claimed in claim 1, wherein said UV-curable coating composition further comprises at least one reactive diluent selected from the group consisting of difunctional esters of acrylic acid, difunctional esters of methacrylic acid, polyfunctional esters of methacrylic acid, polyfunctional esters of acrylic acid with acrylic acid, diols, polyols and mixtures thereof.

Claim 3 (Previously Presented): The process as claimed in claim 1, wherein, based on an overall weight of the coating composition, excluding pigments and fillers, the coating composition comprises:

5 - 90% by weight of at least one aliphatic urethane (meth)acrylate prepolymer;

10 - 95% by weight of the reactive diluent; and

0.1 - 5% by weight of at least one photoinitiator.

Claim 4 (Previously Presented): The process as claimed in claim 1, wherein the urethane (meth)acrylate prepolymer has a number-average molecular weight in the range from 500 to 5000.

Claim 5 (Previously Presented): The process as claimed in claim 1, wherein the urethane (meth)acrylate prepolymer has a double bond equivalent weight in the range from 250 to 2000.

Claims 6-8 (Canceled).

Claim 9 (Previously Presented): The process as claimed in claim 1 wherein at least a portion of the free isocyanate groups of the urethane (meth)acrylate prepolymer have been reacted with one or more molecules which contain an isocyanate-reactive group and a hydrophilic, stabilizing group.

Claim 10 (Canceled).

Claim 11 (Previously Presented): The process as claimed in claim 1, wherein the coating composition further comprises from 2 to 40% by weight of one or more pigments, based on the overall weight of the coating composition.

Claim 12 (Previously Presented): The process as claimed in claim 1, wherein the coating composition further comprises from 1 to 30% by weight of one or more fillers, based on the overall weight of the coating composition.

Claim 13 (Previously Presented): The process as claimed in claim 1, wherein the scratch-resistant coating is obtained by a multicoat coating process, said multicoat coating process comprising:

- i. applying a basecoat material to a substrate surface;
- ii. drying and/or crosslinking the basecoat film;
- iii. applying the UV-curable coating composition; and
- iv. curing the UV-curable coating composition by exposure to UV light under an inert gas atmosphere.

Claim 14 (Previously Presented): The process as claimed in claim 1, wherein the substrate has a metallic surface.

Claim 15 (Previously Presented): The process as claimed in claim 3, wherein the coating composition further comprises from 2 to 9% by weight of one or more additives.

Claim 16 (Previously Presented): The process as claimed in claim 5, wherein the aliphatic urethane (meth)acrylate prepolymer has a double bond equivalent weight in the range from 300 to 900 daltons.

Claim 17 (Previously Presented): The process as claimed in claim 13, wherein the basecoat material is pigmented.

Claim 18 (Previously Presented): The process as claimed in claim 1, wherein said UV-curable coating composition comprises a reactive diluent comprising at least one esterified polyol having five or more acrylate groups.

Claim 19 (Canceled).

Claim 20 (Previously Presented): The process as claimed in claim 1, wherein the urethane prepolymer consists of reacted units of (A), (B), and (C).

Claim 21 (Previously Presented): The process as claimed in claim 3, wherein the coating composition further comprises up to 15% by weight of one or more additives.

Claim 22 (Previously Presented): The process as claimed in claim 3, wherein the coating composition further comprises up to 20% by weight of one or more further diluents.

Claim 23 (Previously Presented): A scratch resistant coating prepared by the process as claimed in Claim 1.

Claim 24 (Currently Amended): The process as claimed in claim 1, wherein said UV-curable coating composition comprises ~~pentaerythritol~~ dipentaerythritol penta/hexaacrylate.

Claim 25 (New): A process for producing a scratch-resistant coating, said process comprising:

applying at least one UV-curable coating composition comprising a mixture of at least one aliphatic urethane (meth)acrylate prepolymer having at least two double bonds per molecule and having a viscosity in the range from 250 to 11,000 mPa•s and wherein at least a portion of the free isocyanate groups of the urethane (meth)acrylate prepolymer have been reacted with one or more of a hydroxyalkyl ester of an aliphatic dicarboxylic acid having at least 6 carbon atoms or an alkylamine amide of an aliphatic dicarboxylic acid having at least 6 carbon atoms, and at least one reactive diluent, to a substrate to form a wet coating and

curing said wet coating by exposure to ultraviolet radiation under an inert gas atmosphere,

wherein the aliphatic urethane prepolymer is obtained by reacting at least 25% of the isocyanate groups of a compound (A) containing isocyanate groups with (B) at least one hydroxy alkyl ester of acrylic acid, methacrylic acid or both acrylic acid and methacrylic acid, and subsequently reacting any remaining isocyanate groups of (A) with a chain extender (C) selected from the group consisting of an aliphatic diol having up to 20 carbon atoms, a

polyol having up to 20 carbon atoms, a diamine having up to 20 carbon atoms, a polyamine having up to 20 carbon atoms, an alkanolamine having up to 20 carbon atoms, a dimercaptan having up to 20 carbon atoms, a polymercaptan having up to 20 carbon atoms, a hydroxyalkylester of a long-chain dicarboxylic acid, and an alkylamineamide of a long chain dicarboxylic acid.

Claim 26 (New): The process as claimed in claim 25, wherein said UV-curable coating composition further comprises at least one reactive diluent selected from the group consisting of difunctional esters of acrylic acid, difunctional esters of methacrylic acid, polyfunctional esters of methacrylic acid, polyfunctional esters of acrylic acid with acrylic acid, diols, polyols and mixtures thereof.

Claim 27 (New): The process as claimed in claim 25, wherein, based on an overall weight of the coating composition, excluding pigments and fillers, the coating composition comprises:

- 5 - 90% by weight of at least one aliphatic urethane (meth)acrylate prepolymer;
- 10 - 95% by weight of the reactive diluent; and
- 0.1 - 5% by weight of at least one photoinitiator.

Claim 28 (New): The process as claimed in claim 25, wherein the urethane (meth)acrylate prepolymer has a number-average molecular weight in the range from 500 to 5000.

Claim 29 (New): The process as claimed in claim 25, wherein the urethane (meth)acrylate prepolymer has a double bond equivalent weight in the range from 250 to 2000.

Claim 30 (New): The process as claimed in claim 25, wherein the one or more isocyanate groups of component A have been reacted in a stoichiometric ratio with one or more hydroxyl groups of component B.

Claim 31 (New): The process as claimed in claim 25 wherein at least a portion of the free isocyanate groups of the urethane (meth)acrylate prepolymer have been reacted with one or more molecules which contain an isocyanate-reactive group and a hydrophilic, stabilizing group.

Claim 32 (New): The process as claimed in claim 25, wherein the coating composition further comprises from 2 to 40% by weight of one or more pigments, based on the overall weight of the coating composition.

Claim 33 (New): The process as claimed in claim 25, wherein the coating composition further comprises from 1 to 30% by weight of one or more fillers, based on the overall weight of the coating composition.

Claim 34 (New): The process as claimed in claim 25, wherein the scratch-resistant coating is obtained by a multicoat coating process, said multicoat coating process comprising:

- i. applying a basecoat material to a substrate surface;
- ii. drying and/or crosslinking the basecoat film;

- iii. applying the UV-curable coating composition; and
- iv. curing the UV-curable coating composition by exposure to UV light under an inert gas atmosphere.

Claim 35 (New): The process as claimed in claim 25, wherein the substrate has a metallic surface.

Claim 36 (New): The process as claimed in claim 27, wherein the coating composition further comprises from 2 to 9% by weight of one or more additives.

Claim 37 (New): The process as claimed in claim 29, wherein the aliphatic urethane (meth)acrylate prepolymer has a double bond equivalent weight in the range from 300 to 900 daltons.

Claim 38 (New): The process as claimed in claim 35, wherein the basecoat material is pigmented.

Claim 39 (New): The process as claimed in claim 25, wherein said UV-curable coating composition comprises a reactive diluent comprising at least one esterified polyol having five or more acrylate groups.

Claim 40 (New): The process as claimed in Claim 25, wherein the aliphatic urethane prepolymer comprises reacted groups of a diamine or a polyamine.



Claim 41 (New): The process as claimed in claim 25, wherein the urethane prepolymer consists of reacted units of (A), (B), and (C).

Claim 42 (New): The process as claimed in claim 27, wherein the coating composition further comprises up to 15% by weight of one or more additives.

Claim 43 (New): The process as claimed in claim 27, wherein the coating composition further comprises up to 20% by weight of one or more further diluents.

Claim 44 (New): A scratch resistant coating prepared by the process as claimed in Claim 25.

Claim 45 (New): The process as claimed in claim 25, wherein said UV-curable coating composition comprises dipentaerythritol penta/hexaacrylate.

Claim 46 (New): A process for producing a scratch-resistant coating, said process comprising:

applying at least one UV-curable coating composition comprising a mixture of at least one aliphatic urethane (meth)acrylate prepolymer comprising reacted groups of a diamine or a polyamine and having at least two double bonds per molecule and having a viscosity in the range from 250 to 11,000 mPa•s, and at least one reactive diluent, to a substrate to form a wet coating and

curing said wet coating by exposure to ultraviolet radiation under an inert gas atmosphere,

wherein the aliphatic urethane prepolymer is obtained by reacting at least 25% of the isocyanate groups of a compound (A) containing isocyanate groups with (B) at least one hydroxy alkyl ester of acrylic acid, methacrylic acid or both acrylic acid and methacrylic acid, and subsequently reacting any remaining isocyanate groups of (A) with a chain extender (C) selected from the group consisting of an aliphatic diol having up to 20 carbon atoms, a polyol having up to 20 carbon atoms, a diamine having up to 20 carbon atoms, a polyamine having up to 20 carbon atoms, an alkanolamine having up to 20 carbon atoms, a dimercaptan having up to 20 carbon atoms, a polymercaptan having up to 20 carbon atoms, a hydroxyalkylester of a long-chain dicarboxylic acid, and an alkylamineamide of a long chain dicarboxylic acid.

Claim 47 (New): The process as claimed in claim 46, wherein said UV-curable coating composition further comprises at least one reactive diluent selected from the group consisting of difunctional esters of acrylic acid, difunctional esters of methacrylic acid, polyfunctional esters of methacrylic acid, polyfunctional esters of acrylic acid with acrylic acid, diols, polyols and mixtures thereof.

Claim 48 (New): The process as claimed in claim 46, wherein, based on an overall weight of the coating composition, excluding pigments and fillers, the coating composition comprises:

- 5 - 90% by weight of at least one aliphatic urethane (meth)acrylate prepolymer;
- 10 - 95% by weight of the reactive diluent; and
- 0.1 - 5% by weight of at least one photoinitiator.

Claim 49 (New): The process as claimed in claim 46, wherein the urethane (meth)acrylate prepolymer has a number-average molecular weight in the range from 500 to 5000.

Claim 50 (New): The process as claimed in claim 46, wherein the urethane (meth)acrylate prepolymer has a double bond equivalent weight in the range from 250 to 2000.

Claim 51 (New): The process as claimed in claim 46, wherein the one or more isocyanate groups of component A have been reacted in a stoichiometric ratio with one or more hydroxyl groups of component B.

Claim 52 (New): The process as claimed in claim 46 wherein at least a portion of the free isocyanate groups of the urethane (meth)acrylate prepolymer have been reacted with one or more molecules which contain an isocyanate-reactive group and a hydrophilic, stabilizing group.

Claim 53 (New): The process as claimed in claim 46, wherein the coating composition further comprises from 2 to 40% by weight of one or more pigments, based on the overall weight of the coating composition.

Claim 54 (New): The process as claimed in claim 46, wherein the coating composition further comprises from 1 to 30% by weight of one or more fillers, based on the overall weight of the coating composition.

Claim 55 (New): The process as claimed in claim 46, wherein the scratch-resistant coating is obtained by a multicoat coating process, said multicoat coating process comprising:

- i. applying a basecoat material to a substrate surface;
- ii. drying and/or crosslinking the basecoat film;
- iii. applying the UV-curable coating composition; and
- iv. curing the UV-curable coating composition by exposure to UV light under an inert gas atmosphere.

Claim 56 (New): The process as claimed in claim 46, wherein the substrate has a metallic surface.

Claim 57 (New): The process as claimed in claim 48, wherein the coating composition further comprises from 2 to 9% by weight of one or more additives.

Claim 58 (New): The process as claimed in claim 50, wherein the aliphatic urethane (meth)acrylate prepolymer has a double bond equivalent weight in the range from 300 to 900 daltons.

Claim 59 (New): The process as claimed in claim 55, wherein the basecoat material is pigmented.

Claim 60 (New): The process as claimed in claim 46, wherein said UV-curable coating composition comprises a reactive diluent comprising at least one esterified polyol having five or more acrylate groups.

Claim 61 (New): The process as claimed in claim 46, wherein the urethane prepolymer consists of reacted units of (A), (B), and (C).

Claim 62 (New): The process as claimed in claim 48, wherein the coating composition further comprises up to 15% by weight of one or more additives.

Claim 63 (New): The process as claimed in claim 48, wherein the coating composition further comprises up to 20% by weight of one or more further diluents.

Claim 64 (New): A scratch resistant coating prepared by the process as claimed in Claim 46.

Claim 65 (New): The process as claimed in claim 46, wherein said UV-curable coating composition comprises dipentaerythritol penta/hexaacrylate.

BASIS FOR THE AMENDMENT

Claims 1-5, 9, 11-18 and 20-65 are active in the present application. Claims 6-8, 10, and 19 have been canceled. Claims 25-65 are new claims. Claim 1 has been amended to incorporate the limitations of previous Claim 7. Claim 24 has been amended to correct a typographical error. Support for new Claims 25-65 is found in the original claims. No new matter is believed to have been added by this amendment.

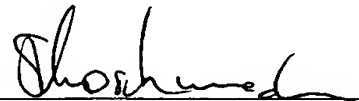
REQUEST FOR RECONSIDERATION

Applicants thank Examiner Tsoy for the indication in the Office Action of January 29, 2004 that the subject matter of Claims 7, 10 and 19 is allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims. Independent Claim 1 has been amended to include the limitations of Claim 7. New independent Claims 26 and 46 have been added.

Applicants submit the amendment to the claims obviates the rejections and places all now-pending claims in condition for allowance. Applicants respectfully request the withdrawal of the rejections and the passage of all now-pending claims to Issue.

Respectfully submitted,

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